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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,182	12/08/2003	Colin McCullough	55797US015	2896
32692	7590	05/24/2004	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427			SAVAGE, JASON L	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 05/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/730,182

**Applicant(s)**

MCCULLOUGH ET AL.

**Examiner**

Jason L. Savage

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 45-48 and 50-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 45-48 and 50-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3-11-04</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

***Claim Objections***

Claim 51 is objected to because of the following informalities: In line 4 of the claim, applicant states the 'wire'. However, the claim is drawn to a cable (emphasis added) and there is nothing else in the claim that would provided antecedent basis for the wire recited in the claim. The mention of wire in line 4 appears to be an oversight and should instead refer to the cable. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 45-48 and 50-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sowman (US 3,795,524).

Sowman teaches fibers, films, flakes, and microspheres of novel aluminum borate or aluminum borosilicate compositions (col. 1, ln. 13-24). Sowman teaches that aluminum borosilicate fibers can be made which are continuous in length, strong, glossy, having a high moduli of elasticity (col. 2, ln. 8-23). Sowman does not exemplify an embodiment wherein the continuous fibers are disposed in an aluminum matrix; however, it does teach that the continuous fibers may be advantageously used in metal

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matrix composites including aluminum matrix composites due to their thermal stability, strength, flexibility and other properties (col. 13, ln. 11-27). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the continuous fibers of Sowman in an aluminum matrix composite since it is specifically stated as a suitable use by the reference.

Regarding the limitation that the aluminum matrix composite be a wire or a cable, Applicant has not defined what is meant by wire or cable. Sowman teaches that the fibers may be formed into a continuous strand, tow, yarn or other multifiber article (col. 2, ln. 47-64). A continuous strand coated with the aluminum matrix metal taught by Sowman would meet the limitation of being a wire or cable. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the aluminum matrix metal on a fibrous tow in order to help keep the fibers in the tow bonded together.

Sowman is silent to the composite cable or wire have a modulus and average tensile strength within the ranges claimed by Applicant in claims 45-46 and 51. However, Sowman states that the aluminum borosilicate continuous fibers may have a modulus of elasticity between 48-241 GPa and a tensile strength between 551-2413 MPA (col. 9, ln. 48-68) which is similar to the modulus and tensile strengths for the fibers used in the present invention which is disclosed on page 11, line 5-10 of the specification. Sowman also teaches that increasing the amount of  $\text{SiO}_2$  in the fiber will decrease the modulus of elasticity as well as other properties of the fiber (col. 9, ln. 55-59). Furthermore, Applicant recites on page 3, lines 10-19 of the specification that a

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preferred embodiment of the invention that exhibits the claimed wire or cable modulus and average tensile strength employs aluminum borosilicate fibers having specific ranges of  $\text{Al}_2\text{O}_3$ ,  $\text{SiO}_2$ , and  $\text{B}_2\text{O}_3$ . Sowman teaches multiple embodiments which overlap the ranges of  $\text{Al}_2\text{O}_3$ ,  $\text{SiO}_2$ , and  $\text{B}_2\text{O}_3$  in the fibers such as the fibers of Examples 1-6, 8-10 and 12-17.

It is the position of the Examiner that since Sowman uses fibers having similar modulus of elasticity and average tensile strengths and composition as the fibers of Applicant, the wire or cable of Sowman having the fibers embedded in an aluminum matrix would also exhibit a similar modulus and average tensile strength as the claimed product. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the composite article having an optimal modulus and tensile strength tailored for the application for which the product would ultimately be used.

Regarding claims 47-48 and 52-54, Sowman teaches that the continuous fibers may have a modulus of elasticity and average tensile strength which overlap the claimed ranges (col. 9, ln. 48-68).


Regarding claim 50, Sowman is silent to the electrical conductivity of the wire, however, given that Sowman uses fiber compositions having the same compositions of applicant which are embedded in an aluminum matrix, it would be reasonable to expect the wire of Sowman to have a similar electrical conductivity to the wire claimed by Applicant.

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Any inquiry to this communication or earlier communications from the Examiner should be directed to Jason Savage, whose telephone number is (703)305-0549. The Examiner can normally be reached Monday to Friday from 6:30 AM to 4:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Deborah Jones, can be reached on (703)308-3822.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jason Savage



DEBORAH JONES  
SUPERVISORY PATENT EXAMINER

5-12-04